Vol. II. JULY, 1870. No. 7.

3041
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THE

AMERICAN PRACTITIONER:

A MONTHLY JOURNAL OF

MEDICINE AND SURGERY.

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LOUISVILLE, KY:
JOHN P. MORTON AND COMPANY,
PUBLISHERS.

THREE DOLLARS PER ANNUM.

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[Formerly "Western Journal of Medicine."]

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THE AMERICAN PRACTITIONER.

JULY, 1870.

Certainly it is excellent discipline for an author to feel that he must say all he has to say in the fewest possible words, or his reader is sure to skip them; and in the plainest possible words, or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want downright facts at present more than anything else.—RUSKIN.

Original Communications.

ON THE USE OF ELECTRICITY IN MEDICINE.

BY JAMES W. HOLLAND, M. D.,

Professor of Chemistry in the University of Louisville.

Of all the forces evoked from matter, electricity has been regarded with the greatest wonder. As a curative agent it has been long known to the profession, but even to this time its therapeutic value has not been determined with anything like accuracy. That it is capable of powerfully affecting the living system no one can doubt. It is as little to be doubted that its indiscriminate employment may be injurious; but applied judiciously, and by the processes afforded by modern art, there is reason to believe that its effects are often admirable. None of its advocates claim for it an advanced position as an exclusive medical agent, but only that it should be discreetly used in combination with other remedies. As Althaus pithily puts it, "It is not electricity that cures diseases, but the physician who may cure disease by means of electricity."

The subject of electricity in its relation to the animal economy is too extensive for a single paper. I propose in this simply to present the leading facts brought out by late researches upon the rational employment of electricity in practice.

A question of some concern to the practitioner, and one frequently made, is, what form of apparatus can be applied to the greatest variety of cases, and with proportionally the best results? To answer this will require a succinct review of the three agencies commonly included in the term electricity. They are static or frictional, galvanic and faradaic electricity. The first is generated by the friction of a revolving glass plate. The patient is placed upon an insulated stool and charged from the prime conductor; then the electricity is drawn from him by either a pointed or round metallic rod. Shocks from the charged Leyden-jars also belong to this division. Dr. Golding Bird reported signal success from it in cases of chorea and amenorrhœa; but owing to the feeble quantity, the deficiency in amount of its production, and the disorganizing energy of the jar, it is about dismissed from general practice. It is the most potent restorative known to our art in cases of suspended animation from partial drowning, but its other effects can be more readily obtained by faradism.

The second form—galvanic electricity, sometimes called "the direct current," or "the constant current"—is produced by chemical action in the battery. The essentials of its production are two metallic plates, externally in contact, immersed in a liquid that has the powder of corroding one of them. Modifications of Bunsen's, Grove's, or Daniell's batteries are especially favored by electro-therapeutists, though they are still in need of one that is convenient and portable. All who are entitled to a voice declare that the zinc-carbon and zinc-platinum electro-motors are the most powerful; Althaus and some others prefer the zinc-copper members

of Daniell's battery, with sulphate of copper solution as an intermediate conductor, because of the duration of their constant action. Stowed in a closet or corner of the office, they will run for months without cleaning, requiring only occasional supplies of water to make up the deficiency from evaporation, and by multiplying the elements any desired intensity can be obtained. During the war some exceedingly manageable batteries were manufactured for the telegraph department. The cells were put up in section-boxes, each containing six, some of Bunsen's and some of Daniell's order. They can be had very cheap at any depot of telegraphic materials; and by combining a series of boxes they may serve every purpose as a medical battery.

It is worth remarking that the direction of the current in the terminal arch is from the most resisting member toward the one that is corroded—*i. e.*, from the copper to the zinc; and further, that the projecting point of the copper is called the positive, that of the zinc the negative pole.

Galvanism has a strong calorific and chemical action, and is used when decomposition of fluids or cauterization of tissues is desired. It has been employed lately by Dr. Hammond for modifying general nervous irritability. When properly applied it stimulates powerfully the retina, and may be used with advantage for amaurosis. It is the only current that will affect through their bony coverings the brain and spinal marrow. The heating and inflaming action of this current would lead us to apprehend danger from its prolonged employment for muscular excitation; still we are assured by Remak that there are cases of paralysis cured by galvanism that have resisted stoutly all the capabilities of the induction currents. Notwithstanding the strong foothold it has gained in the larger cities and the metropolitan hospitals, the battery will never become the common property of the profession. It is too cumbersome ever to be portable; time and patience are consumed in putting it together, and cleaning it; and

finally, the number of its medical applications is too small to justify its being kept by the general practitioner.

The third form, faradaic or induced electricity, is obtained by either the cell and coil or the rotary machine. In the first, by alternately making and breaking a current of electricity generated in a galvanic cell, a bar of soft iron is magnetized and demagnetized, and there is induced in a parallel wire a vibratory or to-and-fro current, which is more energetic than the inducing current. In thousands of offices and households these instruments are to be found in the hands of persons who, from ignorance, are incompetent to work them. A mechanician of this city has received for repair a number of them, only a few weeks from the shop, in which the zinc members of the cell had been utterly dissolved by the surrounding acidulous fluid. Commercial zinc is contaminated with lead and other metals, the effect being to establish minute voltaic circuits between them and the adjacent particles of zinc, thus corroding the plate and wasting the electric force. To prevent this the zinc is cleansed well with sulphuric acid, and mercury rubbed upon it to form an amalgam. Painting the outer surface of the zinc cylinder with a varnish of amber will still further increase its power of resistance. By this protection all action upon the zinc is suspended, while the circuit is opened.

Faradaic electricity is evolved from the magneto-electric instrument by causing two helices of insulated copper wire, wound about soft iron cores, to revolve by mechanical force before the faces of a strong magnet; whenever they approach or recede from the magnets a current of electricity is induced in the helices.

The faradaic currents are necessarily interrupted, though the intervals may be so short as to be inappreciable. That of the coil or galvano-electric instrument is called "to and fro" because the direction so changes with the opening and closing of the primary circuit.

The physiological effects of the opening current are the most marked, and therefore, when employed for therapeutical purposes, we take into account merely the strongest—*i. e.*, the current of opening.

By the attachment of a commutator to the rotary machine all the currents are thrown into a definite and constant direction; this arrangement allowing a distinct positive and negative pole.

The course of the current is an important consideration, and may be learned by holding the conductors or electrodes in the hands, when the most pain will be experienced where the current leaves the body—that is, in the hand grasping the negative electrode.

The profession has come to recognize the advantage of galvanism in the above-mentioned conditions mainly through the luminous researches and persistent praise of Remak; but, notwithstanding that it deserves all that is claimed for it, it is the expressed opinion of Duchenne, one of the highest authorities, "that *induced* electricity is essentially medical electricity." To the question which of the faradaic instruments is best adapted to the ordinary run of medical cases, Becquerel emphatically replies, "I am thoroughly convinced that all electro-magnetic (cell and coil) instruments, without exception, must cease to be used in medical practice, and be supplanted by magneto-electric (rotary) machines." A candid examination into their relative abilities has elicited from Meyer the following: "We use for physiological and pathological investigations exclusively the volta-induction (cell and coil) apparatus, while for therapeutical purposes the magneto-induction apparatus takes its place." While I do not advocate so warmly as Becquerel the superior merits of the rotary machine, nor predict for it such absolute reign in the office, yet owing to the facility of keeping it, and the freedom from unpleasant handling of acids, I incline to the opinion that it will generally be more satisfactory than the other. Its

great advantage is that it can be used at any time without chemical preparation, though an assistant will be needed to turn the wheel. Quite a large number of ills—chronic rheumatism, for example—can be treated by patients themselves. Here this instrument is exceedingly convenient. It has been urged as an objection to it that the power of the magnet is lessened by lapse of time. This can be prevented by placing in the idle intervals a "keeper" over the magnetic poles. Entire control for modulating the power of this instrument can be gained by intercalating in the continuity of one of the conducting wires a tube filled with water, and closed at each end with perforated corks, through which the divided ends of the conductor are pushed. By increasing or diminishing the distance of separation, and thereby adding to or lessening the amount of resistance from the interposed barrier of water, the energy of the current can be effectually graduated.

The method of Duchenne, which still bears his name, was founded upon the succeeding observations:

1. When two dry electrodes (metallic cylinders connected to the instrument by polar wires and filled with sponge) are applied near one another upon the thick dry epidermis, the current does not penetrate the skin, but passes between them, crackling and sparkling.

2. If one of the electrode sponges be moistened, a superficial sensation is felt under the dry one.

3. If the skin under both be slightly moistened, a stronger though still superficial sensation is perceived.

4. If both sponges and skin are well wetted, there will be perceived neither sparks nor crackling nor burning, but instead muscular contractions will be excited, accompanied by various forms of pain, according to the deeper part acted upon.

The last and culminating observation is of untold value in the management of cases requiring local faradization of muscles or nerves.

For electrization of the skin, required in affections of its sensibility, three modes are in use by Duchenne.

1. The electrical hand, used only for the face, and in very irritable persons. A moistened electrode is placed on the sacro-lumbar region, and the operator, taking the other in his hand, passes his fingers over the affected part.

2. Solid metallic electrodes. They are carried backward and forward over the part needing stimulation.

3. The metallic brush. This instrument consists of a bundle of fine wires, with which we either scourge the skin, or else allow it to act upon the same spot as long as it can be borne.

The latter mode, frequently employed for obstinate neuralgia, is a most powerful form of local stimulus, and from the severe pain and counter-irritation it is called the "electric moxa." For paretic troubles, it is customary to place the moist electrodes very near together, upon the superjacent skin, when we desire to excite a motor-nerve or muscle, though a muscle or set of muscles can be convulsed by faradizing a distant trunkal portion of the nerve distributed to them.

Remak discovered that some muscles contracted more promptly and powerfully when acted upon at the motor-point — that is, where the motor-nerve enters the muscle. From his investigations the valuable rule has been deduced that to obtain the strongest movements possible from the weakest possible current one exciter must be placed on the motor-point; the other, in its close neighborhood, over the belly of the muscle.

The difficulty of electrically reaching the greater number of inner organs is one not easily surmounted; the rectum, bladder, and uterus are the most accessible. But it would extend this paper too much to go into details.

The attention of the profession was first directed by Marshall Hall to the value of observations upon the varying

relations of paralyzed parts to the electric current as criteria for diagnosis and prognosis. He conducted the current to the paralyzed member through two basins of water, and was brought to the conclusion that in spinal paralysis the electro-muscular contractility diminishes, while in cerebral paralysis it actually increases. By "spinal paralysis" he meant not one caused by a disease of the spinal cord, but one in which the muscles are uninfluenced by this organ, haply through some breach of continuity in the motor-nerve. He comprised in the term "cerebral paralysis" all that would affect the motor power of the will, depriving the muscles of brain control, such as diseases of the brain or of the dorsal region of the cord. The conclusions of Todd have a better claim to scientific accuracy, and disprove in part the validity of Hall's assertion. In cases of cerebral paralysis the electro-muscular contractility was found by him not at all elevated, but even sunk below the normal point. His well-conducted observations resulted in the following statements, which are quoted through Meyer:

1. In those cases in which the paralyzed muscles, when subjected to the electric excitement, exhibit stronger convulsions than the homonymous muscles of the unparalyzed members, a certain degree of contraction was apparent, corresponding in degree to the violence of convulsion. There was thus in these cases, besides the paralysis, an irritable condition of the cerebral matter, such as is found in apoplexies, where the brain is otherwise healthy, in tubercular formations, but especially in traumatic injuries, accompanied with meningitis and meningeal apoplexy.

2. In those cases in which the electric excitement occasioned no convulsions, or but slight ones, the muscles were ordinarily weak and in a condition of atrophy; the temperature and assimilative power of the affected parts were depressed; and the paralysis was attended with a structural modification of the cerebral substance, which arose either gradually, with an atheromatous deterioration of the arterial

membranes, or suddenly, in cases where obstruction had occurred in the arteries.

3. In cases in which an apoplectic paralysis had attacked men who were not far advanced in years, and had always possessed good health, the paralysis being complete, no difference was perceived as regards irritability between the paralyzed and healthy muscles.

In no affection are the curative powers of electricity more strikingly exhibited than in paralysis; but here a great difference is observed, according to the cause of the disease. If it belong to the class called by Marshall Hall "cerebral"—*i. e.*, dependent on a central lesion—but little benefit will result from its use; and where the brain tissue has been disorganized it would be vain to expect the muscles ever to obey its behests. Hence in the "spinal" or peripheral paralysis this agent has most power; and next in order come those in which the central lesion is susceptible of repair.

Meyer sums up as follows some of the inlying qualities on account of which it is to be preferred to all other means:

1. Electricity is a stimulus to motor, sensory, and special-sense nerves. 2. It increases the supply of blood to the irritated part of the body. 3. It augments the temperature and increases the volume of the irritated part. 4. It enhances the contractile energy of the vascular walls. 5. It counteracts the secondary changes occurring in inactive nerves and muscles. 6. It is capable of restoring to nerves and muscles their lost functional power. 7. Through it we are enabled to act directly on the brain and spinal marrow.

The several methods of treatment with the induction apparatus are to transmit the current back and forth between the nerve plexus or the spinal end of a nerve and its ramifications in the affected muscles, and especially Duchenne's method of faradizing separately each paralyzed muscle.

Some care should be exercised in regulating the energy of the current and the duration of the session. It is better

to begin with a gentle current, conducted for a short time, and increase in strength and duration according to the exigencies of the case. As soon as the electro-muscular contractility is more responsive the current is to be diminished.

There are cases seemingly arising by a reaction from the sexual organs upon the nerve centers, and closely simulating cerebral and spinal paralysis, the causes of which are very insignificant when compared with the frequent gravity of the effects. The palsy is coincident with either a hyperæsthesia or anæsthesia of the parts involved, the sensibility and motor irritability changing from a low to a high degree without any apparent cause. Duchenne has relieved many such cases of this hysterical paralysis by the aid of electricity, and with surprising ease.

I have lately seen a case that might be classed with these paralyses, of general nervous irritability. In December, 1869, Mrs. R., of middle age, after unusual exertion and mental emotion, was prostrated with a partial hemiplegia of the left side, and a most atrocious hyperæsthesia of the loins and lower limbs. When the electrical treatment was begun, on March 10, 1870, there was a noticeable muscular weakness, a sense of tightness and numbness, with occasional neuralgia in the left arm. The left lower limb was habitually cold and numb from the knee down, and in walking was dragged after the other. There was some impairment of electro-muscular contractility and sensibility on the ailing side. The rotation instrument was employed for fifteen or twenty minutes every day, and after six sittings a well-marked amelioration of all the symptoms was obtained. In twenty sittings she has recovered the use and normal temperature of both the arm and leg; the power of balancing with eyes closed, entirely lost before, is now restored; the numbness and neuralgia completely dispelled.

Electricity is reputed to afford us means for prognosis in those paralytic affections of infants dependent upon inflam-

mation or congestion of the spinal cord. When the afflicted muscles have suffered but little in their electro-contractility we may conclude a favorable prognosis; but when a member has lost this power to a great degree, owing to the radical vices in nutrition, a tedious treatment is frequently unavailing. In these last cases all that can be hoped from electric irritation is an improvement in the muscles still reactive.

Following some cases of diphtheria, there is a form of paralysis in which the electric condition of the muscles affected is normal; and here the prognosis is favorable. The phrenic nerve may become involved, and when the vital spark is flickering the faradaic current, rightly employed, will often rekindle it. A late and probably the best method, applicable also to asphyxia from chloroform, coal gas, carbonic acid, etc., is to pull the skin and outer border of the sterno-mastoid muscle toward the middle line, and press the narrow, moist electrodes firmly down upon the lower end and anterior border of the scalenus anticus. The other side is similarly treated with the other electrode, and the instrument made to work energetically. In this way not only the two phrenic nerves, but those branches arising from the brachial and cervical plexus, which supply various inspiratory muscles, are stimulated, and natural movements of the diaphragm, with strong heavings of the chest, are produced.

In the paralysis of the extensor muscles due to lead poisoning, the ailing muscles suffer in both electro-muscular sensibility and contractility. The first is only weakened; the last considerably, and often utterly, lost. If atrophy ensues, it will be in those muscles alone which have been affected in their electro-contractility, and these are the last to yield to the beneficial agency of electricity.

It is asserted that the diseases attacking sensation, such as neuralgia and anæsthesia, are hardly less amendable by electricity than the classes spoken of above. In neuralgia it has a reflex action, as an epispastic more sudden and more

fleeting than any of those in common use. Sometimes the desired result can be obtained by transmitting for ten minutes with moist electrodes a moderately strong induced current through the painful nerve. This mode has the power of reducing directly the nervous sensibility, though as a certain remedy it ranks lower than the application of the electric brush. To operate with this instrument, Duchenne first dries the adjacent skin with an absorbent powder, so as to prevent a painful penetration of the current, and then applies the brushes upon it in close proximity. Meyer recommends in obstinate cases the electric moxa, if the patient endure its severe but abbreviated pain. He reports the happiest results in all cases of peripheric neuralgia which do not originate from deeper organic affections or mechanical causes, as a nervous tumor or a carious tooth.

M. K., a laboring man, aged forty years, under my professional charge, who several weeks ago was injured by a fall upon the left shoulder, whereby a lesion of the axillary band of nerves was produced, suffers from a paralysis of the forearm, with anæsthesia of its posterior surface. Faradization of the palsied muscles has partially restored their warmth and plumpness, though continued treatment for the anæsthesia has been postponed until the trunkal breach has been healed, when local electric stimulation will probably give a full restitution of motion and sensation. If it were an anæsthesia of local origin, resulting from any of the ordinary causes, the electric current would promise immediate relief.

In a large number of cases of nervous deafness, accompanied by no apparent organic change, happening in hysteria, or as sequels to measles and scarlatina, Duchenne was gratified to find an improvement, and in some instances a cure from the intermittent current. He insulates a wire as far as its point, introduces it into the auditory canal half filled with tepid water, and holding the other exciter to the mastoid process, allows a weak current to act for a few minutes. He

has been so fortunate as to relieve a case of congenital deaf-mutism.

In laryngeal paralysis, caused by cold or strong emotion, or as a hysterical phase in young girls, the induction current applied percutaneously, either by brushes or sponges, is generally followed by sudden and signal success—the voice returning as by a miracle.

It is an opinion, rapidly spreading, that rheumatism results from a retention of cutaneous secretions, brought about by a sudden change in the temperature of the atmosphere. The interrupted current will generally loose the cutaneous dams, and by stimulating the contractile walls of blood-vessels and lymphatics, the blood and lymph cells will freely circulate and relieve the local engorgement. To treat most suitably the articular inflammations, a very vigorous current is sent for ten minutes transversely through the joint, frequently changing its direction. Sometimes this removes at once and permanently the most violent and persistent arthritic pangs. And where there is a perceptible alleviation of pain, the process of exudation soon ceases, and the inflammatory products are absorbed.

Mrs. M. C., aged sixty, had suffered about ten days from a rheumatic inflammation, with some exudation in the right wrist, rendering the joint immovable; there was one point upon the dorsal surface especially prominent, hard, and marked by excessive pain. The phalanges were semiflexed and stiff, probably from effusion around the tendons. Stimulating liniments and lotions, conjoined with regulated diet, had been used without making the faintest impression upon the disease. In one sitting the pain and tenderness were greatly relieved, and by local faradization of the muscles in the forearm almost entire freedom of movement in the phalanges, with partial but very evident benefit to the carpal mobility, was produced. The sittings were held on alternate days, and after the third, as none of the symptoms remained

but a slight swelling, the case was dismissed. She shook hands unconstrainedly with me, a few days since, and reported the joint as well.

Several German electro-therapeutists have published extended lists of cases of chronic rheumatic stiffening in the knee, elbow, shoulder, and other joints, perfectly cured by a strong faradaic current administered by several seances. It has been noticed that when the first start in resorption has been given by the current, apparently by an after effect the process continues unaided until the whole exudation has disappeared.

Electric excitation by wet sponges upon the neighboring skin has proved very beneficial in derangements or suppression of the secretion of the mammæ. Becquerel publishes the following convincing instance: A mother, aged twenty-seven years, nursing six months, with an abundance of milk, through violent mental emotion had the secretion reduced in the left breast and suspended in the right. Hardly a trace of milk had been found for eight days. After allowing a mild interrupted current to act upon the left breast, the flow of milk began anew, and after the third application was copious enough for the child's wants.

The thermal and chemical effects of the galvanic current have given it some prominence as a remedy in surgical diseases. The caustic platina-loop has been employed with highly satisfactory results in the treatment of hemorrhages, fistulæ, polypi, and deep ulcers. Its disadvantages are asserted to be the costliness of the apparatus, liability to fusion or breakage of the wire while operating, and the technical difficulties, requiring for proper management a previous course of study and experiment. When two polar needles connected with a strong battery are introduced into a blood-vessel, the fluid is decomposed — acids, albumen, and fibrin going to the positive pole, while the alkalies, iron, and bases generally collect at the negative. As a consequence of this electrolysis, the albumen will in a short while form flakes and

coagula about the positive needle, and around these a regular process of consolidation ensue. Upon these observed effects the method of galvano-puncture for varix and aneurism is founded, though in practice the best results are accomplished by inserting the positive pole alone into the tumor, and closing the current by the negative upon the neighboring skin. The cultivation of this field of galvanism is in the hands of eminent observers, who, from its fruitfulness, are promised an abundant harvest. Nor will an empty garner be the reward of others who are experimenting with electricity in gynecology and obstetrics.

LOUISVILLE, KY.

ON THE TREATMENT OF PNEUMONIA.

BY J. HALE, M. D.

The treatment of pneumonia, after all that has been written on the subject, is a question in regard to which entirely discordant views still prevail in the profession. At one time large bleedings seem to have been demanded, and were well borne according to the authors of that day. Lænnec, and Louis were early impressed with the conviction that these bleedings were not eminently successful, and that in many cases they were absolutely injurious. Since the times of these eminent men many revolutions in professional opinion have taken place, and various modes of treatment have been proposed, embracing the extremes of depletion and stimulation. These discrepancies may be explained, I think, by the fact that pneumonia varies in type and severity not only in different cases, but in different countries, seasons, and localities. And if this be so, extremes in practice, be they what they may, adopted as a general rule, and in all cases indiscriminately, can never afford satisfactory results.

The statistics of the different methods of treating pneumonia are so contradictory as to deprive them of the slightest claim to be considered as authority. No definite conclusions can be arrived at from cases massed together; each case must be studied by itself, in its character, stage when first seen, and circumstances of the patient. So great are the differences in constitutions that no two patients will exhibit the same characteristics throughout the course of the disease, nor will they admit of precisely the same treatment. It is the appreciation of these differences that enables the physician to meet the emergencies in each case. The only proper course is to treat each case according to its individuality. Pneumonia requires not a single remedy, but many; it is the judicious combination and application of remedies that secures success in its treatment, and not a single remedy or stereotyped course of treatment.

In the first or congestive stage of pneumonia in plethoric subjects, in healthy, non-malarial districts, blood-letting is a valuable therapeutic agent; but in the second stage, and in malarial regions, as a rule it is hazardous. I have not practiced blood-letting nor used tartar emetic in the treatment of pneumonia for ten years, because we have other therapeutical agents that answer better, and are attended by none of the dangers incident to the use of these agents. Veratrum viride and digitalis are the remedies upon which I rely to control the undue action of the heart and arteries. In the early stage of the disease, in robust subjects, after moving the bowels with a mercurial purgative, I give Norwood's tincture of veratrum in four-drop doses, with ten grains of nitrate of potash, and from a fourth to a third of a grain of morphine, every four hours, increasing the tincture two drops every dose until the pulse is reduced to sixty-five a minute, or nausea and vomiting occurs. I then reduce it to four drops, and continue it until the active stage of the disease has passed by; then I stop the veratrum, but continue the nitrate of potash, with from one

to two grains of opium and half a grain of ipecac; and where there is a tendency to asthenia I add two grains of quinia to each dose. Under this treatment, frank, uncomplicated cases of pneumonia have seldom failed to terminate by resolution in from six to twelve days. But in some cases it has failed, and the fever has continued, with derangement of all the secretions, and complete hepatization of a portion of the lung tissue. In such cases I have derived great benefit from the use of mercury, digitalis, and opium, with free vesication over the diseased lung. I usually give one grain of calomel, with two grains of digitalis and one of opium, every four hours, and continue until resolution is established, or the constitutional effects of the mercury are manifested. I then discontinue the mercury and add two grains of quinia to each dose, and continue until the febrile excitement is controlled.

In asthenic pneumonia, or in the pneumonia of old or delicate subjects, after opening the bowels with castor-oil or Epsom salts, I usually rely upon digitalis, muriate of ammonia, and opium. I give from one to two grains of digitalis, in substance, with ten grains of muriate of ammonia and one grain of opium, every four hours, and continue until the febrile excitement is controlled; I then stop the digitalis and add two grains of quinia to each dose, and continue until convalescence is established.

In certain districts pneumonia is often complicated with malarial fever, and is characterized by marked remissions and exacerbations. In such cases I found a combination of quinia, digitalis, and opium to answer admirably. I usually give five grains of quinia, with one or two grains of digitalis and one of opium, every four hours. In most cases this course meets every indication, and from my observation they terminate more favorably, and in a shorter time, than uncomplicated cases. I seldom use purgatives in the treatment of pneumonia after the bowels have been once thoroughly evacuated; and if necessary to open them again, I prefer saline laxatives.

Stimulants are seldom necessary, and I think are often injurious if given in the early stage of pneumonia. In the advanced stage they are valuable, and in many cases indispensable. I prefer carbonate of ammonia and brandy to all others. Nourishment is an essential element in the treatment of all protracted cases, and milk is to be preferred to all other articles of diet.

The local treatment of pneumonia is of considerable importance, especially in pleuro-pneumonia, and all other cases attended by much pain. I generally rely upon cupping and sinapisms; if they fail to afford relief, I inject a solution of morphia under the skin, over the seat of pain—from a fourth to half a grain is sufficient. The inhalation of chloroform is also efficacious in such cases, and not only relieves the pain, but mitigates the fever, and I am inclined to think facilitates resolution of the inflammation. Warm applications are valuable in all cases, and should always be used when more active measures are not deemed necessary. In the advanced stage of the disease, when resolution is tardy, and effusion of serum takes place in the chest, I resort to free vesication. I have applied the tincture of iodine with very good effects in mild cases, and especially in the pneumonias of children—painting the entire walls of the chest two or three times a day. I have also used a liniment, in the cases of children and delicate females, composed of olive oil, turpentine, and ammonia.

Expectorants, as a rule, are not advisable. I never use them, except in the advanced stage of the disease, when the bronchial secretion is deficient and the cough troublesome. The position of the patient should be frequently changed in protracted cases, especially in children. Ventilation of the sick-chamber should be thorough, and the temperature uniform at about sixty-five degrees Fahrenheit.

Acute pneumonia sometimes, but rarely, terminates in the chronic form of the disease. I have had several cases under

my care, and have had the gratification of seeing them all recover. In the cases occurring in persons of healthy constitution I gave iodide of mercury in half-grain doses, with two grains of quinia and half a grain of opium, three times a day, and continued it until the constitutional effects of the mercury were manifest; I then discontinued the mercury, quinia, etc., and gave iodide of potassium in fifteen-grain doses, with a drachm of fluid extract of sarsaparilla and compound tincture of bark, three times a day. In the cases occurring in persons of strumous diathesis I gave the iodide of potash, sarsaparilla, and bark, with cod-liver oil. I used free counter-irritation in all the cases, by means of flying blisters in the commencement, succeeded by tincture of iodine, freely applied over the diseased lung, and continued until resolution was completed. Nourishing diet, consisting of milk, eggs, and beefsteak, was used in all.

OWENSBORO, KY.

OBSERVATIONS ON THE MINERAL SPRINGS OF KENTUCKY.

BY LUNSFORD P. YANDELL, M. D.

In 1832, while editing the Transylvania Journal of Medicine, I made a chemical analysis of some of the principal mineral springs of Kentucky, with reference especially to their therapeutic action. The results of my researches were published in the fifth volume of that journal. Subsequently I gave some account of the chemical and medicinal qualities of the Paroquet Springs, in the Western Journal of Medicine. Prof. Peter and Prof. J. Lawrence Smith have also published notices of some of these springs. Since the date of these publications a geological survey of a large portion of the state has been

made, and many of its mineral springs have been carefully analyzed by Prof. Peter and Prof. Owen, connected with the survey. From all these sources it is believed a sufficient amount of material may be gathered to furnish a satisfactory account of the chemical constitution and remedial powers of the Kentucky springs which have attracted most attention. I propose in this article, and in some others that may follow, to submit such a description so far as I am able from my reading and observation on the subject.

An apology may be due to some of the readers of the Practitioner for writing a paper on the medicinal powers of mineral waters. There are physicians, I know, who altogether discredit any such virtue in those waters. The late eminent Prof. Dudley was among that number. He attributed all the benefit derived by invalids from mineral springs to the exercise and change of air and diet and general modes of living attendant upon a visit to them; and in confirmation of this view he was in the habit of citing an instance of which he had read an account in some English publication. A spring in some elevated region of England, by some means it seems, acquired a name for curing diseases, and finally became noted as a watering-place. Invalids were attracted to it in great numbers, and were relieved of their various maladies while drinking the water. At length some of it was sent to London to be analyzed by Prof. Brande, then one of the leading chemists of Great Britain. The answer returned by the learned chemist was that the water was as nearly free from all mineral ingredients as water is ever found to be issuing from the earth — so nearly so, indeed, that druggists might use it in compounding their medicines for *aqua pura* itself.

This instance is certainly instructive, and goes as far as a single case could to establish Dr. Dudley's position. It illustrates the efficacy of moral and physical influences in the correction of both mental and bodily disorders. It con-

firms the experience, of which the mass is accumulating every day, that medicine is not always necessary to the recovery of health. But if any one is tempted by instances like this to go further, and, claiming for the accessories all the healing virtues, deny to the springs themselves any medicinal properties, a satisfactory answer is furnished by the constitution of mineral springs. The substances contained in them are well known as among our tried remedial agents. They can hardly be less efficacious because taken in the form in which they were prepared by nature. It may be, on the contrary, that the combination and degree of dilution in which they occur in these waters is the best that can be effected; and it is quite certain that many of them operate more efficaciously for being largely diluted, as they are in these springs.

As to the salutary effects of mineral waters upon the valetudinary, whatever may be the skepticism of a few learned physicians, there is no doubt in the popular mind. The belief indeed rests upon an amount of evidence that ought to be accepted as conclusive; and whether the good they accomplish is due mainly to the medical qualities of the waters themselves or to the extraneous influences that attend their use is not a question in which our patients feel any particular concern so long as they are relieved by them. To the invalids of cities especially—made so by the constant strain upon the nervous system, and the want of exercise and pure air—they are a resource of incalculable value. But they are not less adapted to cases occurring in the country, and hence it follows that invalids and physicians everywhere are interested in knowing the character of the various medicinal springs of our country, and the complaints in which they promise to be useful.

The present paper will be devoted to the CRAB ORCHARD SPRINGS, which have long enjoyed a reputation for curative powers, and have within a few years become more widely known from the salts afforded by those waters. Railroads have made them easily accessible from the South, the West,

and the North, and they are every year visited by the seekers of health and pleasure in increasing numbers. The country around them is elevated and dry, and presents a landscape of great beauty. They occur in the formation known to Kentucky geologists as the black slate or bituminous shale, which immediately overlies the limestone of the Falls of the Ohio, and forms the base of the hills which stretch away north and south below the falls. This shale crops out everywhere at the foot of these hills, which in Kentucky extend east from the Ohio, and then north, and is the surface rock at Crab Orchard. Abounding in the sulphuret of iron, it gives origin wherever it prevails to chalybeate springs. Together with iron it often contains magnesia, and other bases which by the reäction of sulphur are converted into soluble sulphates. Associated with these salts are carbonates, resulting from the carbonic acid contained in nearly all water, and muriates, which were probably left behind by the ocean when it receded from these ancient deposits.

The Crab Orchard Springs vary quite as much in strength as they do in chemical constitution. Some hold suspended less than the sixth of a grain of solid matter in a thousand grains of water. One contains more than seven grains in the same quantity of water. Only one—*i. e.*, "Howard's Sulphur Well"—is impregnated with sulphureted hydrogen, which forms so common an element in the mineral waters of Kentucky. Carbonic acid in a free state exists in all the springs. Iron is found in all but one. Sulphate of magnesia has been detected in all, but varies in amount in the several springs—from a trace to nearly three grains in the thousand. These two constituents, iron and magnesia, may be taken as the representative ingredients of these waters, being those to which they chiefly owe their therapeutic qualities. In only one is there enough of the latter to render the spring decidedly laxative. All the others belong to the chalybeate class of springs.

In the "Grove Spring" the solid matters amount to a little more than the third of a grain in a thousand grains of the water, of which iron and magnesia form a part. Although minute, the quantity is sufficient to render the water efficacious when it is drunk freely. The carbonate and sulphate of magnesia, associated with the iron and manganese, tend to keep the bowels in a soluble condition.

The "Brown Spring" and the "Field Spring" differ but little in character from the first, the amount of solid matter being only a few grains greater. In all, the presence of free carbonic acid has the effect of making the water more palatable, and less offensive to the stomach.

"Howard's Sulphur Well" differs from all the springs, in containing sulphureted hydrogen. In all other respects it is the same in its ingredients.

From this account of the characteristics of these springs, the medical reader will be at no loss to determine the character of diseases to which they are applicable. They are useful in that large class of cases in which the blood has become impoverished. Convalescents from whatever complaint, the subjects of intermittent fever of long standing, persons who have become feeble from loss of blood or wasting discharges—in a word, the anæmic, by whatever cause rendered so—are likely to be greatly benefited by these springs. They increase the appetite, improve the digestion, and invigorate the system. If this is not the effect experienced, after a short trial, it may be inferred that they are not exerting a beneficial influence. The invalid should feel himself growing stronger, more active, more buoyant in spirits; and if, on the contrary, he is feverish, dull, has headache and a sense of discomfort after using the water, he may be assured that it is not adapted to his case. In order to produce any decided impression upon the system it must be taken liberally. It should be drunk not only in the morning, but throughout the day; otherwise, the proportion of iron

being so small, hardly enough will be taken into the system to effect any beneficial change.

"Sowder's Spring" affords the Crab Orchard salts, so generally in use in Kentucky as a substitute for Epsom salts. The solid matters in this spring make 7.153 parts in 1,000 of the water, and of this more than half consists of sulphate of magnesia, sulphate of soda, and muriate of soda. These are very common substances; and the last is not generally regarded as a medicine, but in this water they compose a certain and most eligible laxative. And besides these aperient salts this spring contains carbonate of magnesia, valuable as an antacid, and becoming purgative by combining with the acids of the alimentary canal, and also a very small amount of iron and bromine, by which tonic and alterative properties are communicated to it. The combination is one of singular excellence. Its effect upon the bowels is uniform and reliable, and for all those troubles in which constipation forms a prominent feature it is entitled to rank with our best laxatives. The trace of iron held in solution by the free carbonic acid imparts to it feebly tonic qualities, and the bromine in its combination with the potash and soda bases must exert something of the therapeutic influence of bromide of potassium.

The time for drinking this water is the morning, when the stomach is empty. It may be drunk in very large quantities on a full stomach, without moving the bowels, but a few half-pints before breakfast seldom fail to act upon most persons as an efficient aperient. Most invalids will find it beneficial to drink the two varieties of water in conjunction—one in the morning to evacuate the bowels, the other during the day for its tonic effects. The magnesian water may be used day after day, by persons in the most delicate health, without any fear of exhaustion, its effect being simply to unload the bowels. However watery the evacuations, they never tend to debility, and it is a common observation that iron is more prompt in its action when the bowels are kept open. In fact, it may

be said that this is the one condition essential to bodily health and comfort.

As a group, there is no reason to doubt the Crab Orchard Springs are worthy of all the reputation they have gained for medicinal virtues. The aperient qualities of Sowder's Spring are perfectly manifest; and of its utility in dyspepsia, in functional disorders of the liver, in habitual constipation, and all those complaints which require a gently laxative and alterative treatment, there can be no question. The tonic power of the chalybeate springs, in which the quantity of iron is so insignificant, might admit of a doubt if it had not been established by so large an experience. But when we consider that the average amount of iron in the human system is only about seventy grains, and that the quantity excreted daily does not exceed a grain, it is evident that the waste may be fully supplied by these feeble chalybeate waters. The iron contained in them is dissolved by free carbonic acid, and this is known to be one of the combinations most favorable to the introduction of that metal into the system. Of the efficacy of these waters in restoring the blood to its normal condition, in chlorotic and anæmic subjects, abundant proof is presented at the springs every day.

The Sulphur Well, which in respect to its saline constituents is the feeblest of the group, claims attention on account of the sulphureted hydrogen with which it is impregnated. Sulphur springs are deemed especially efficacious in cutaneous affections, and are thought to produce an alterative effect in glandular obstructions.

Invalids, after a pleasant ride over a smooth road, may expect to find at the Crab Orchard Springs all the arrangements necessary to their comfort; and with the fine air, the pleasing scenery, and all the facilities afforded there for abundant exercise, coöperating with the mineral waters, can hardly fail to come away from them invigorated and improved.

LOUISVILLE, KY.

ON THE IMMEDIATE USE OF THE IMMOVABLE APPARATUS IN FRACTURES OF THE LOWER EXTREMITY.

BY DAVID W. YANDELL, M. D.

The highest American authority on fractures gives it as his opinion that the immovable apparatus should not be used during the first ten days after the accident; and while he admits the great value of the starch bandage in selected cases, he states it as a fact that the number of accidents resulting from this practice is out of all proportion with any other yet introduced. Some of the cases in this paper are reported in order to show that the delay insisted on by Prof. Hamilton is unnecessary, at least in many instances. And a suggestion is offered whereby the dangers which he depicts may in the main be avoided.

Many surgeons believe that traction of the limb by some means is all but indispensable in this class of injuries. The cases which are here detailed will, it is believed, tend to establish that if extension and counter-extension be necessary, they are accomplished just as certainly and effectively by the pressure and friction of the starch bandage as by the perineal band in the long splint, or by a foot-weight. It has been well said by Mr. Erichsen that these several methods act at last very much in the same way—to wit, by fatiguing and relaxing the muscles of the limb. And every surgeon must have observed, whatever the method used, that, after the lapse of three or four days, shortening of the member is almost invariably corrected. "Nor is violent traction or forcible effort to bring down the limb to its proper length ever needed; for, by waiting quietly, the limb falls into its normal

length"* whenever the contractility of the muscles is finally overcome—whenever their relaxation is complete—which, as has just been remarked, is usually at the expiration of three or four days. Yet it can not be denied that the age of the patient, the nature and situation of the injury, and the amount of displacement of the fragments, exercises, each in its way, a controlling influence over the result in all fractures. In simple fracture of the shaft of the femur, for instance, the nearer the condyles, and the more transverse the fracture, and the less the displacement, the less is the liability to shortening. In children and very young persons there seems to be no special tendency to this deformity; but, on the contrary, a special tendency to recover under almost any mode of treatment, without appreciable shortening. But in muscular adults, where the fracture is oblique, and high up, and accompanied by great displacement of the fragments, it seems absolutely impossible in some cases to avoid a certain amount of shortening, no matter what the treatment adopted, or how dexterously used, or how carefully watched. Indeed that excellent surgeon, Prof. Blackman, says† that "Prof. Hamilton is entitled to immortal praise for the pains which he has taken to prove that, whatever the treatment adopted, ... in a great majority of cases a certain degree of shortening, and perhaps deformity, can not be prevented." Mr. Erichsen, whose noble work on surgery finds so many readers in this country, claims, on the other hand, that he has "treated many fractured thighs, in adults, without the slightest shortening." In a clinical lecture on fracture of the femur, delivered by this gentleman in July, 1868,‡ while the last edition of the Science and Art of Surgery must have been in the press, he says there is "great liability for a certain amount of deformity to take place in the direction of short-

* Erichsen—London Lancet.

† American Journal of Medical Sciences, January 7, 1870, p. 174.

‡ London Lancet.

ening, notwithstanding every care on the part of the surgeon." And further on he says: "Many cases, even in the adult, have been turned out of the hospital with scarcely any appreciable shortening, and most commonly with not more than half an inch of shortening at the outside, which is a very good result in cases of oblique fracture of the shaft of the femur." Again he says: "Shortening, after fracture of the shaft of the femur, to the extent of half an inch is of no earthly consequence; it produces no appreciable lameness or lagging or difference in the gait."* Perhaps, after all, the discrepancy between these deservedly great authorities is more apparent than real — Prof. Hamilton measuring shortening by the tape-line, while Mr. Erichsen only sees it when it is sufficient to produce appreciable lameness or lagging. In the cases reported in this paper, the term *shortening*, unless otherwise stated, is used in the sense in which it is believed Mr. Erichsen used it when he says that it produced no appreciable difference in gait.

But the main purpose of the present paper is to record my individual experience in the immediate use of the fixed apparatus, and to furnish a brief report of a number of cases illustrative of the value of this treatment.

Previous to 1865 I used starch to stiffen the bandages. Since Mr. Tufnell, of Dublin, published (Dublin Quarterly Journal, February, 1865) his very valuable paper "On the Fixed Apparatus in Fractures,"† I have adopted the paste he recommends, and think it possesses advantages over any one of the substances used for this purpose.

I find in practice, however, that instead of following the receipt for the paste as given by Mr. Tufnell, it is more convenient to take, for instance, in fractures of the leg, say the whites of one dozen eggs: beat these to a stiff froth; then stir in flour briskly and well to a moderately thick batter.

* London Lancet.

† Republished in Braithwaite's Retrospect, part 61.

If properly made, this paste dries very quickly, usually becoming sufficiently hard within two to six hours to allow of the bandages being divided with ease.

Perhaps the following description of the manner in which the fixed apparatus is used may not be thought out of place. Where extension is deemed desirable until the bandage becomes firm, or longer, the dressing is begun by applying adhesive strips to the limb after the manner first recommended by Prof. Gross. This, with foot-weight attached, is shown in fig. 1. In fractures of the shaft of the femur, as soon as the strips are put on, envelop the entire limb evenly and well in a layer of cotton-wadding. Then take a piece of moderately thick pasteboard, four inches wide, and long enough to reach from the nates to the heel; make in this, throughout its entire length and through half its thickness, with a knife, incisions one inch apart; cover this, the outer surface, with a layer of paste. Apply to the posterior part of the limb. Should the pasteboard prove too wide about the lower part of the leg and ankle, tear off a sufficiency of its edges. Place on each side of the limb, from the hip as far down toward the ankle as may be necessary, a narrow strip of pasteboard, and a single short strip on the front part of the thigh. Use now more wadding about the condyles and malleoli if necessary.

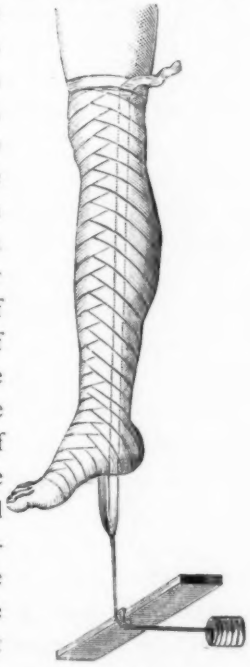


Fig. 1.

Hold the splints in position by pasting or tying over them, at intervals, slips of bandage. Envelop the whole with a layer of the bandage of Scultetus, well covered with the paste. Carry from the upper part of this a strong spica.

Apply a second layer of the strip-bandage. Strengthen the spica by a few additional turns; add a third layer of the strips; use the paste liberally; attach the foot-weight; and if counter-extension be desired, effect it by elastic tubing in the perineum, or by lowering the trunk; and the dressing is complete. If it be well done, immobility of the hip and entire pelvis is almost certainly secured. Fig. 2 illustrates this dressing. In fractures of the leg I also use three splints of pasteboard. One, four inches broad, applied on the back of the leg, and reaching from three inches above the knee to a short distance below the heel. The two others are applied on the sides of the leg, and are made sufficiently long to meet on the sole of the foot. In children I usually dispense with splints, the eggs and flour making the dressing sufficiently firm.

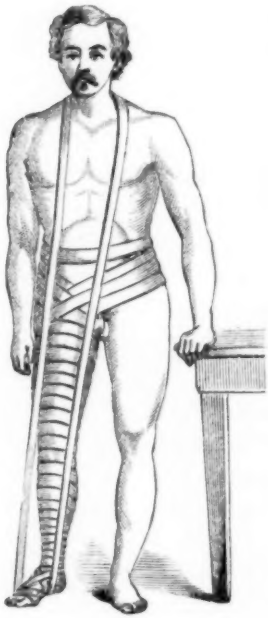


Fig. 2.

The first series embraces ten cases of fracture of the thigh-bone.

Case I. W. G., a four-year old boy, fell a distance of a few feet on to the pavement, fracturing his right femur transversely in its middle third. The next day I applied the immovable apparatus, adjusting it while the patient was under chloroform. I made for the succeeding twelve hours extension and counter-extension as well as could be done with a refractory child. In a couple of days the youngster was sitting up in bed playing with his toys. To satisfy his physician that apposition of the parts was satisfactory, I

slit the dressing over the thigh, securing it after with the loop-knot. In five weeks union was complete, without perceptible shortening.

CASE II. Mary McC., aged nine years, a very delicate child, fell from a fence and got a transverse fracture in the lower third of the femur. The immovable apparatus was applied immediately. She took to crutches in a week, and at the end of six weeks was discharged, with shortening of but one fourth of an inch.

CASE III. Lewis, a robust negro, aged six years, fell a distance of five feet, producing a transverse fracture at the middle of the left femur. The immovable dressing was applied within an hour. He hobbled about on his little crutches at the end of four days. In six weeks he was dismissed, without deformity or perceptible shortening of the limb.

CASE IV. A stout girl, aged thirteen years, while balancing herself on a flour-barrel, fell and fractured her right femur obliquely at its middle. In two hours after the leg was encased in the immovable apparatus. She used crutches and a sling in ten days, and made a perfect recovery in seven weeks.

CASE V. Mary M., a slender child of eleven years, fell a distance of eighteen feet and fractured the left thigh transversely at its middle. The limb was dressed within an hour, as in the previous cases. In a week she trusted herself on crutches; in five more weeks she went on foot without appreciable shortening.

CASE VI. A painter, aged thirty, a powerfully muscled man, fell from the roof of a building into a pile of sand, fracturing both thighs: the right at two points, at its lower fourth and at its middle; the left about its center. I made extension by weights and adhesive plaster, and applied the immovable dressing. Things went smoothly. In eight weeks the dressings were removed. Some deformity of the right thigh was visible. There must have been shortening also;

but whatever was the degree it must have had compensation by equal shortening of the left leg. The man certainly walks well, and has resumed his trade.

CASE VII. Mac., aged nine years, while standing on the platform of a railroad-car, going at the rate of fifteen miles an hour, was struck by the end of a fence-rail, which tore his pants off, and fractured his right thigh-bone in its middle. The limb was dressed as above within six hours. He recovered, without perceptible shortening.

CASE VIII. The same patient, three weeks after he was up and about, fell down a stairway and got a second fracture in the same situation. He was treated as before, with a like result.

CASE IX. A railroad employee, aged twenty-two years, very stout and muscular, was caught between two cars, breaking his left thigh at its upper third. Fourteen hours after I put it in the immovable apparatus. In six weeks the dressings were removed, and the limb found to be of its proper length.

CASE X. A lad, aged fifteen, was thrown with sufficient violence against a curb-stone to break his right femur at its middle. The limb was dressed as above within two hours, and when liberated at the end of five weeks, was without appreciable shortening.

The second series of cases relates to fractures of one or both bones of the leg, and also numbers ten cases.

CASE XI. J. R., aged eleven years, was kicked by a horse on the left tibia just below its tubercle, producing a compound, comminuted fracture. The laceration of the soft parts was excessively ugly. Three hours after I put the limb in the immovable apparatus, carrying it well up the thigh; I then cut out a space sufficient to dress and watch the wound. I picked out with my fingers several fragments of bone, and brought the parts into tolerable apposition. At the end of five days he was taken in a wagon over a rough road,

nine miles into the country. In nine weeks he walked into my office with a firm, smart step, and without the slightest shortening of the limb.

Case XII. Captain N., aged sixty-four, fell from a ladder on Tuesday, and broke both bones of the leg transversely in their middle third. The fracture was dressed in the usual way by the physician who first saw him. He had an atrocious night, and early the next morning sent for me. I found the limb hot, painful, and swollen. I applied the immovable dressing and left him comfortable. The next day he sat up, with his leg resting upon a chair. The following Sunday he went on crutches, with his foot in a sling, two hundred yards to church. In six weeks I turned his limb loose without deformity or shortening.

Case XIII. Mr. D., aged fifty-six, jumped from the hurricane-deck of a burning steamer, at the wharf at St. Louis, on to a boat alongside, a distance of twenty-five or thirty feet. He was picked up senseless, and with both bones of the left leg fractured in their upper third. He got an opiate, had the limb well encased in splints and pillows, and came home by rail. I saw him forty-eight hours after the accident; he was worsted by the journey. The limb was swollen and the soft parts considerably contused. I applied the immovable apparatus in the afternoon; that night at one o'clock he sent for me because of such pain in the leg that he was unable to sleep. I divided the dressing from toe to knee, giving immediate ease, and secured it with a loop-bandage. In a few days the patient sat up; in a few more he was comfortable on crutches; in fifty-six days all dressings were removed. There was no shortening.

Case XIV. M., a locomotive driver, received a blow on the right leg, fracturing it transversely in its middle. He was brought a distance of thirty miles on the cars to the city. His limb was put in temporary dressings by my friend Prof. Bayless; the next morning I applied the immovable

apparatus. In a week the patient used crutches. In six weeks he was discharged cured, without shortening.

CASE XV. A negro man broke both bones of his left leg near their middle. The immovable apparatus was applied at once. The man went about in a few days on crutches, and made a good recovery, without shortening.

CASE XVI. Mr. C., a railroad employee, got a simple transverse fracture of both bones of the leg in their lower third. The limb was put in the immovable apparatus. The patient sat up the next day; in a week he was going on crutches in comfort; at the end of six weeks the dressings were removed; and there was no shortening.

CASE XVII. Mr. B., of Scott County, Ky., got a compound fracture of the right tibia just below the tubercle by the kick of a mule. The wound in the integuments was three quarters of an inch in diameter. The soft parts immediately concerned were much contused. The hemorrhage was considerable, and had, as I was told, been difficult to arrest. I saw the case fourteen hours after the accident. In removing the temporary dressings blood again flowed freely from the wound. I immediately plugged the opening with carbolized lint, which I secured by some turns of the roller. This I allowed to remain until I had applied the immovable apparatus; I then, before the eggs and flour had hardened, cut the necessary space in the bandages and removed the plug; no hemorrhage followed. Approximation of the edges of the wound by plaster and the application of carbolic lotion completed the dressing. The parts were not disturbed for six days, when the wound was found to be a granulating sore, almost healed. Two days after the patient rode on the cars to his home, distant a hundred miles. His recovery was rapid, uninterrupted, and without shortening of the limb.

CASE XVIII. F. S. fell on the ice; broke his right leg at its lower third. In three hours after, the immovable

apparatus was applied. Three days subsequently he resumed his business (faro-dealing), and in six weeks was well, without shortening.

CASE XIX. J. F., adult, got a fracture of the left tibia, in its lower fourth. The immovable apparatus was put on immediately after. In two days he was on crutches; in forty days he was well. No shortening.

CASE XX. Col. —— broke his fibula at the inferior fifth. The next day the fixed apparatus was applied. In two weeks he went by rail to New York, and recovered without trouble.

I could add yet other cases to this list; but as they differ in no material point from those already detailed, I omit them. I have purposely omitted a number of cases of fracture of the thigh and leg, seen in the practice of others, as the consulting surgeon, where the fixed dressing was not applied until the expiration of from seven to fourteen days after the accident. My wish is merely to direct attention to the use of this dressing *immediately* after the fracture occurs, being persuaded that the delay enjoined by many high authorities is, to say the least, unnecessary. While I have followed for years this plan of putting up limbs, I have been called on to open the bandages, by reason of pain or swelling of the parts, in but a single instance; and in this the fault was mine rather than that of the dressing. Yet to obviate in some degree the principal objection urged against this dressing—that it may become too tight as the swelling augments, or too loose as the swelling subsides (all without the knowledge of the surgeon)—I venture to recommend that as soon as the paste becomes dry the bandages should be cut throughout their entire length (as represented in fig. 3), and their edges brought together either by additional

Fig. 3.

strips or, better, by loop-knots (as seen in fig. 4). If this be done—and it may always be done in a few hours, if the paste suggested by Mr. Tufnell be used—I am unable to conceive how, if mischief follow, it can be fairly chargeable to the dressing. And if in addition the bandage be applied in strips, instead of as a roller, I must believe that the least skilled manipulator can dress a fractured limb without the slightest risk of danger from undue pressure. If swelling occurs, the dressing can be instantly loosened. When the parts shrink the edges of the apparatus can be pared or overlapped. The limb lies in a bed which, though perfectly soft, is yet sufficiently snug and firm to insure entire immobility. Seutin advised division of the apparatus when it became dry; but when starch is used this is seldom before the expiration of thirty or forty hours—the very period at which swelling is likely to occur. I myself rarely slit up the dressing before the end of twenty-four hours. I have never been called on to do so in consequence of pain in the limb, except in the single instance referred to. I not infrequently allow it to go untouched until its final removal. For where the fracture is put up immediately, and with proper care, swelling is not likely to occur. Should it, however, already exist, it will be necessary when it has begun to subside to open the apparatus, and trim or overlap the edges.

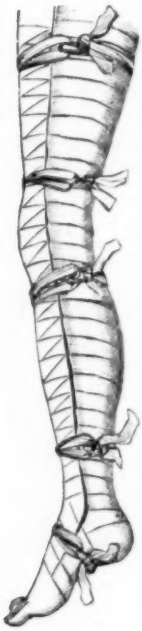


Fig. 4.

As soon as the patient gets on crutches, which should be within the first five days, extension of the limb may be safely trusted to its own weight plus that of the apparatus. I am not sure that extension by other means is ever required where the fixed dressing is used.

LOUISVILLE, KY.

Reviews.

Obstetric Operations, including the Treatment of Hemorrhage. By ROBERT BARNES, M. D., F. R. C. P., etc. With Additions by B. F. DAWSON, M. D., late Lecturer on Uterine Pathology in the Medical Department of the University of New York, etc. New York: D. Appleton & Co.

This is a handsome volume of nearly five hundred pages. As long as the unwise and wicked tax on knowledge, known as duty on imported books, remains—a law which is unjust to foreign publishers and authors, unjust to American authors and to American readers—we will have reprints issued by our publishers, and it is fortunate when the excellent house of Appleton & Co. publish such works.

It is hardly necessary to speak of the general value of this book, and utterly impossible to speak of its great merits in detail, for that would involve a transcript of page after page. We beg any of our friends who believe that obstetrical science and art do not progress, and who are content with the lessons taught fifty or even twenty years ago, to read "Obstetric Operations," and they will change their opinions, and in some important respects their practice. Every physician who is called to the duties of an accoucheur ought to have this book not only in his library, but in his head; it will add greatly to the confident and successful discharge of his professional duty. It has numerous illustrations, most of them being by the author, and thus the value of the volume is enhanced, and the ready understanding of the text facilitated.

Dr. Dawson, so well known to the profession as really the founder and one of the editors of the American Journal of

Obstetrics, and whose energy and zeal in this department of medicine are worthy of praise, has made some valuable additions: at the same time we question the propriety of *editing* and *adding to* the recent works of the living; and Dr. Barnes certainly could well enough make his appearance without an escort before the American profession.

We notice some errors in proof-reading: *e. g.*, on page 419, where the diagnosis of chronic uterine inversion is under discussion, we read "pass a finger into the uterus," etc. Of course rectum should take the place of uterus.

Still further, with the kindest regard and respect for Dr. Dawson, we must protest against his suggestion, made just before detailing the recent original and brilliant operation by Prof. Thomas, in a case of chronic inversion of abdominal section—abdominal section with instrumental dilatation from within of the constricting cervical ring—that this operation "may perhaps be resorted to in some case of puerperal inversion which demands prompt reduction." It is hardly in the remotest degree possible that a recent inversion should require any such proceeding.

A Manual of Clinical Medicine and Physical Diagnosis. By THOMAS HAWKES TANNER, M. D., F. L. S., etc. Third American from the second English edition. Revised and enlarged by TILBURY FOX, M. D., of London, Physician to the Skin Department in University College Hospital. Philadelphia: Henry C. Lea. 1870.

We are not among those who oppose manuals and look upon them as temptations to the student to neglect more elaborate works. Many read manuals and medical journals who would never read anything else, and surely it is better to read a little than none at all. It would be better for the profession if medical works generally were more compendious.

The manual under consideration has from its first appearance met with success; and this last edition, brought out by that clever and industrious writer, Dr. Tilbury Fox, is destined to exalt the reputation of its already distinguished editor. Much new matter has been added, including articles on the laryngoscope, ophthalmoscope, sphygmograph, and thermometer; on the administration of chloroform; feigned diseases, heart diseases, cerebro-spinal and abdominal diseases; and an analysis of the urine. To medical examiners for life insurance companies, and to those interested in medico-legal questions, the manual is especially valuable. Had it not been a good book originally, Tilbury Fox would have made it so in editing it. L. P. Y., JR.

Anatomy, Descriptive and Surgical. By HENRY GRAY, F. R. S., etc. With an Introduction on General Anatomy and Development, by T. HOLMES, M. A., Cantab. Philadelphia: Henry C. Lea. 1870.

The American reprint of Gray's Anatomy, fifth edition, has been issued. Sixty pages have been added to the text and sixty-two new illustrations. The histological considerations which were before scattered throughout the work have been collected into an introductory chapter, rewritten, and an additional chapter on the anatomy of the fetus has been inserted. The work has been carefully revised both in England and America, and errors of the press which had crept into previous editions have been expurgated.

The new arrangement of matter in the present edition is of questionable benefit. We doubt the right of precedence of microscopic to descriptive anatomy. We are certain that with most students any knowledge acquired of the structure of bone will be pretty thoroughly effaced in the struggle with the minute anatomy of the nervous and other systems

before the chapter on osteology is reached. The old arrangement was better where the histological considerations immediately preceded the several systems. The additional chapters on the anatomy of the fetus were called for, and we are glad to see them inserted. The new illustrations are in the main up to the old standard; some few, however, are almost laughably deficient both as works of art and copies of nature.

It is too late to call attention to the general excellence of Gray's Anatomy. The fact that it has been the text-book of three fourths of the students of medicine in this country during the past ten years is sufficient evidence of its worth. Other anatomies excel it in certain points. Wilson has been freer from errors and is more concise; Cruvelhier's work, which was killed by its publishers in this country, is more philosophical; but the exhaustive descriptions, the lucid arrangements, the bold and faithful plates, and the practical observations on surgical relations, make Gray's by every odds the most satisfactory anatomy to the student, teacher, or practitioner. The announcement that the errors in the text have been expurgated, we are glad to find by a careful examination correct in the main. We call attention, however, to the following:

Page 190—Of the thorax it is said, "it is the largest of the three cavities connected with the spine;" and on page 723, "the abdomen is the largest cavity in the body." One must yield.

Page 509—The description of the superior vesical artery, to say the least, is awkward. "The portion of the same vessel (the hypogastric artery) extending from the summit of the bladder *to within an inch and a half of its origin* is not totally impervious, though it becomes considerably reduced in size, and serves to convey blood to the bladder under the name of the superior vesical artery." The inference at least is that the superior vesical artery does not include this "inch and a half."

Page 553—"The hemorrhoidal plexus surrounds the lower end of the rectum, being formed by the superior hemorrhoidal veins, branches of the inferior mesenteric, and the middle and inferior hemorrhoidal." "Branches of the inferior mesenteric" should be put in parentheses.

Page 700—Bizot's statement that the walls of the left ventricle are but twice as thick as those of the right is still adhered to, when it must be evident to any one who examines them that the proportion of three or four to one, as given by most anatomists, is nearer the truth. Besides the measurements of Bizot, as quoted in Pancoast's Wistar, do not authorize this statement except for that portion of the ventricle next to the auriculo-ventricular septum.

Page 845—"The artery of the bulb passes transversely inward *along the base* of the triangular ligament," which is not so, and is not so stated in the first description of the artery on page 513.

We could have wished a better account of the circulation in the liver. It is hard for the student to get an idea of it from the present description. Kiernan's, as quoted by Wilson, is far more satisfactory.

We are glad to see the old arbitrary selection, which went under the name of the "abdominal contents" in other editions and other anatomies, give place to one made up from the viscera alone.

But Gray's Anatomy, for the purposes for which it was issued, is the great anatomy, whether in its own or other languages, and just such a work as we could have expected from a member of the Faculty of St. George's. The thanks of the profession are due to Mr. Lea, its publisher in America, for rescuing it from the fate of Cruvelhier's noble work, and presenting it in so admirable a form. R. O. C.

Manual of Chemical Examination of the Urine in Disease. By AUSTIN FLINT, jr., M. D. New York: D. Appleton & Co.

In this little book, which is a model of neatness throughout — binding, paper, and letter — we are presented with a concise compilation of all the facts required to be known in the examination of urine in disease. It is a book which we have long desired to see published, from the fact that most treatises upon the subject are too cumbrous for the wants of the busy general practitioner. Professor Flint has gone further than mere compilation of a manual; he has by careful study and accurate experiment prepared a standard apparatus, from which, with the aid of the manual, any practitioner can derive those diagnostic conclusions, by analysis, for which he has heretofore been obliged to refer to some distant chemist. The whole work is contained in seventy-five small pages, with a chart for chemical examination, and brief directions for examination of the common varieties of urinary calculi.

W. B. F.

Clinic of the Month.

SARSAPARILLA IN SYPHILIS.—Dr. Allbutt, of Leeds, makes much use of and has great faith in the alterative and anti-syphilitic powers of sarsaparilla. The remedy is used by him as a decoction, which differs only in unimportant details from the compound decoction of the Pharmacopœia. Of this he administers from four to ten ounces three times a day, or prescribes some such quantity as a pint or a pint and a half, to be taken at will during the twenty-four hours. "This medication is expensive, no doubt, but that treatment is the cheapest which most quickly cures the patient. The cases in which sarsaparilla is most useful are those in which the system is thoroughly infected with syphilis, during the tertiary and visceral modes of its appearances. In persons who are in a thoroughly cachectic state, who have lost flesh and strength, and who are suffering from sluggish ulcerations and indolent gummata, the sarsaparilla is really of very great value; also in patients whose constitutions have been undermined by want of nourishment or by excesses, who have gone through many courses of mercury, whose irritable mucous membranes will not bear any more iodide of potassium, and who are so sallow, so worn, so broken down, so eaten up by disease as to seem fit only for the grave. These persons clear up on such quantities of sarsaparilla as I have named, and it is here that the drug fills so important a gap. It need not, and it will not, supersede mercury and iodide of potassium in straightforward cases; but it has its place where these means have failed, or where they are on some grounds to be avoided. How far we are right in claiming this important place for

sarsaparilla can only be known after an extended use of the drug, according to our method, by the profession at large.

"Mr. ——, a gentleman of fortune, who enjoyed every advantage in conditions of life and skilled advice, had never been able to shake himself free from an old syphilis. He had no cutaneous eruption of importance, but was spare, haggard and sallow; his hair fell off, his appetite was capricious, his bowels irritable, and his strength deficient. He was liable also to neuralgias, which were really dreadful, often amounting to great agony. They were chiefly cranial, but also of the nocturnal tibial variety. There were many irregularities of the cranium and of the flat bones. Mercury and iodides, though administered under first-rate advice both in England and Germany, had failed to relieve him; for they were so ill-borne that no continued course could be prescribed, whether combined with tonics and nutrients or alone. I advised sarsaparilla. The medicine agreed with him, and he tried it carefully. He took at most about two pints daily for about three months. Altogether he took more or less sarsaparilla for about five months. His general nutrition improved first, and the 'cachexia' abated; in the next place his neuralgic pains diminished and disappeared. Since this time nearly two years have elapsed, and he has remained healthy and vigorous beyond the average of men." (Practitioner.)

Food in Nervous Disorders.—G. F. Blandford, F. R. C. P., writes that the unaided effects of food in nervous weakness and its attendant disorders have not in all cases met with the trial they deserve. First on the list of the neuroses he describes low nervous depression or melancholia, and says: "If we see such sufferers at an early stage when forcible feeding is not necessary, and they will take that which is ordered, we may prescribe a very large amount of food without fear—nay, with a confident expectation of the greatest benefit. What

the food is to consist of is a point on which little need be said. It is not necessary to adhere to a sick-diet—to beef-tea or boiled mutton, to essences of beef or Liebig's food, or any other of the concentrations so loudly recommended. The ordinary diet-list of the individual in health may be given without hesitation—fish, game, poultry, meat, puddings, and the rest. His appetite should be stimulated by variety, and his dishes may be savory as well as wholesome; but the supply must be large. Such patients for the most part have accustomed themselves to eat during the day a scanty and insufficient amount, and we shall be told that latterly they have not taken half their usual quantity. It is not too much to say that they require double that which they have so long taken; and as we shall not be able to induce them to eat double the quantity at a single meal, it will be necessary to multiply the number of the meals. Instead of breakfast, lunch, and dinner, two of which have probably been but the semblance of a meal, we may institute a series of feedings after this kind: first, something may be given early in the morning, before the patient gets up, as rum and milk, egg and milk, chocolate or *café au lait*. This will be useful in allaying the feeling of extreme depression, and dispelling the gloomy and suicidal thoughts so constantly present on first waking. Next, breakfast may be taken, after dressing, and between it and a two-o'clock lunch something else, as beef-tea or a sandwich. The dinner-hour should not be later than six, and at bedtime some light kind of supper should not be omitted. By this kind of division food may be administered six times in the day; and if the patient wakes in the night, and is restless and nervous, and disinclined to sleep again, food, taken even in small quantity, will often bring back sleep. With all this food may be given a reasonable amount of wine, or wine and stout; and this not by way of curing the disorder by stimulants, but because in conjunction with them less food appears to be required, and also because the addition of some

wine or beer often renders the taking of the food more easy to the patient. Patients have recovered under this treatment in a singularly rapid manner. Some learn in a short time to appreciate the benefit of the food, and miss their meal if from any cause they are unable to take it at the appointed hour; and some have gone on, for years after their recovery, taking not the quantity prescribed during the acute stage of their illness, but one very much larger than that on which they had endeavored to live for so long, and under such a change of regimen have lost all trace of the depression and hypochondria from which they formerly suffered. Although beef-tea, chocolate, and milk have been mentioned as articles of diet, it by no means follows that liquids are to predominate; on the contrary, solid food is far better as a sedative, and also far more nutritious, and it may be taken as in health. Much has been said concerning the advantage of fatty food in nervous disorders, and sugar has been thought to disagree with these patients; but in my own experience I have found that all the various foods—the fatty, the starchy, sugar, and meat—may be given, in due proportion at any rate, to the individuals now under consideration. If this amount and description of diet be administered, there will be little need of medicine, except perhaps of morphia or chloral, to procure sleep at the commencement of the treatment.

"In chronic alcoholism the good effects of food are often strikingly manifest. The intense sinking and craving for the accustomed stimulus may often be effectually met by food, especially if a small quantity be given frequently, as recommended already. Whether the symptoms be the transient and immediate results of a heavy debauch, or the graver signs of commencing degenerative change of the nerve tissues, which runs on to alcoholic paralysis, epilepsy, or dementia, food is equally demanded, and is the one thing which can arrest this degeneration by supplying nutritive elements in large quantities. The recovery in such cases is often astonishing."

Few hysterical or hypochondriacal people take an adequate supply of food. Their nervous energy is very low, and the defect must be supplied in some way. Food is the great restorer. In many cases of neuralgia it will be found that the quantity of food taken, for a series of years, has been deficient, and the radical cure—not the mere alleviation—is effected in many cases by increasing the amount of nutriment to the nervous.

"In all chronic forms of neuroses alcoholic stimulants, in any but the smallest quantity, are a hinderance rather than a help—are productive of evil rather than of good. In such disorders the fear, so commonly entertained both by doctors and patients, of "overloading the stomach," producing "biliousness," and the like, is in the majority of cases not realized when the plan of administering food in large quantity is tried." *(Ibid.)*

On the Local Treatment of Gastric Disease.—Introduce a sound into the stomach, and attach its upper end with a piece of india-rubber tubing to the short arm of a glass syphon, the other end of which has a long portion of tubing attached to it. The patient being told to cough, or to make an effort at vomiting, the instrument—supposing the stomach to have been filled with fluid—immediately begins to play, and continues to act till the contents of the stomach are evacuated. By reversing the conditions, on the other hand, the stomach can be filled. In introducing the sound the mouth should be kept wide open; and, as much saliva is usually secreted, the head should be bent forward and the fluid allowed to flow away. No violence should be used. The washing out of the stomach with alkaline, acid, or spring-water should be performed daily in the morning while the patient is fasting, and continued till the water flows out from the syphon quite clear. *(Ibid.—Deutsches Archiv für klinische Medicin.)*

TREATMENT OF DIARRHEA IN CHILDREN. — M. Heller recommends in the diarrhea of infants the nitrate of bismuth, in doses of one half to one drachm, repeated every hour till better, which usually happens in twenty-four hours. *(Ibid.)*

GALVANO-FARADIZATION.—Dr. G. M. Beard, New York, says there are cases where the peculiar effects of both currents are indicated, and instead of using them alternately or in succession, as has hitherto been done, he applies them *simultaneously*, a method which he calls *galvano-faradization.* The obvious advantage of this method is in those cases where both galvanization and faradization seem to be indicated, and where it may be difficult to decide which is to be preferred; it shortens the time and labor that are necessary for a separate and successive trial of the two currents. (Physician and Pharmaceutist.)

PARALYSIS TREATED BY COLD OR HEAT ALONG THE SPINE. Dr. Chapman, whose name is associated with the spinal ice-bag, concludes a report of several cases of paraplegia, successfully treated by ice and hot water to the spine, by saying he has been informed of several cases of paralysis in which other medical men have either effected a cure or have conferred great benefit by adopting the treatment in question; and that in his own practice increasing experience confirms the statements which he was led to make in the first instance concerning the great remedial power over paralytic affections which this therapeutical method places in our hands. The same author records cases of enteric hemorrhage, pulmonary hemorrhage, uterine hemorrhage, and epistaxis, all relieved by the application of heat over the vaso-motor nerve centers. (Medical Mirror.)

TRICHINA.—A chemist is said to have discovered a remedy for the trichina. It is nitro-glycerine, inserted either into the hog or the eater of the pork, and then exploded.

WOOD TAR AND CARBOLIC ACID IN PSORIASIS.—Dr. M'Call Anderson refers to these as follows:

"Tar should be given in treacle, or in the form of capsules; but on no account in the form of pills, as they are apt to become hard, and consequently useless. The dose is two or three minims, thrice daily, and it may be gradually increased to twenty if necessary. If the digestive organs are in good order and the bowels free, and if too large a dose is not given at the outset, the medicine agrees perfectly. It is useful in cases of chronic psoriasis implicating a large extent of surface; also in cases of chronic eczema, especially if associated with chronic catarrh of the stomach or bowels, or with chronic bronchitis—morbid conditions which it sometimes modifies or removes entirely. . . . . Within the last two years, encouraged by the result of the tar treatment, I have tried on an extensive scale the internal administration of carbolic acid, which, as might be expected, is indicated in the same class of cases as the tar preparations. I prescribe it in doses of from three to ten grains, thrice daily, and usually in the following form: crystallized carbolic acid, three drachms; glycerine, one ounce; distilled water to six ounces; a teaspoonful, in a large wine-glassful of water, thrice daily, some time before food. If the same precautions are observed as in the case of tar, the remedy never disagrees, although transient giddiness is sometimes complained of a minute or two after it is taken, especially after the morning dose. If no improvement takes place within two or three weeks, it generally does not succeed, or at all events not without increasing the dose; but a slight aggravation of the eruption for a few days after the medicine is commenced is by no means an unfavorable symptom. Carbolic acid is especially useful in cases of chronic psoriasis, and not unfrequently I have succeeded in removing the eruption after a fair trial of arsenic, although on the whole it is not so useful as the latter. Those, however, who have much to do with the

treatment of psoriasis can not but consider it a great boon that another remedy has been added to the very limited list of internal medicines which are capable of modifying that most obstinate disease." (Lancet.)

Sulphurous Acid in Necrosis.—George Pollock, Esq., of London, advocates sulphurous acid as a local application in the treatment of carious and necrosed bone. He states that it possesses the advantages of being a very simple and perfectly safe application for the purposes indicated; is thoroughly antiseptic when used as a dressing for foul diseased bone cavities; is comparatively painless when applied to carious bone; and is seldom productive of any irritation in the surrounding soft tissues. In some cases Mr. Pollock uses the acid pure, but in most diluted with an equal quantity of water. *(Ibid.)*

Loss of Sense of Smell.—Dr. Notta has an elaborate article on this subject, accompanied by twenty-four cases. In reference to the *duration* of this loss, the author states that while permanent when the olfactory nerves have become atrophied, or pressed upon by a tumor, yet there are numerous cases where it is temporary, when resulting from coryza or from traumatism, recovery of the sense taking place in from three weeks to seven months, so that the reëstablishment of the function may be hoped for, if no more than a year has elapsed since its loss. The author has found no benefit in therapeutics—veratrum and sternutatory powders having been vainly tried—nature alone effecting a cure. *(Arch. Gen.)*

On a New Method of Treating Gout.—Dr. Fontaine, in a paper communicated to the Academy, states that he has great faith in the efficacy of colchicum in gout; but finds the effects of the drug are best obtained by giving it for but a few days at a time, then suspending its use, and

then resuming it. He thinks that it should never be given for more than two or three days continuously. In order to prevent the formation and promote the destruction or elimination of the uric acid from the economy, he uses—1. Arseniate of potash; 2. Chlorate of potash; 3. Benzoate of lime. M. Fontaine believes the arsenical salt possesses the power of reparation, reconstructing the globules, and regulating the functions of combustion. He gives the chlorate of potash to oxidize the uric acid and the benzoate of lime—previously advised by Ure and by Bouchardat—for the purpose of transforming the urate of soda into the more soluble hippurate, for its solvent action upon the uric compounds, and for its slightly diuretic effect. *(Ibid.)*

DIPHTHERIA.—Letzerich has published an interesting paper on diphtheria. By examination of the diphtheritic membranes from a number of children attacked with laryngo-pharyngeal diphtheria, he has observed different stages of development of what is probably the *zygodesmus fuscus.* Upon the free borders of the diphtheritic masses there are innumerable spores, generally nucleated; these spores are developed with great rapidity, so that the adjacent mucous membrane is soon invaded, and the infection completed. The discharges from the throat of the patient are very contagious, and these spores therefore should be destroyed by caustic alkalies. The author advises free cauterization of the pharynx, inhalations of lime water, and the administration of sulphate of iron. (Virchow's Archives.)

[We can add our testimony to the value, in this disease, of lime water as a local application; but where the diphtheritic formation is limited to the fauces, instead of using it in the form of spray, better by means of a syringe freely wash with the lime water all the affected surface at least three times a day. Conjoined with this let the patient have ice in abundance, and also administer chlorate of potash, with muriated

tincture of iron. By the way, we observe that Niemeyer advises the iron and potash.

A word on another matter, though not *directly* connected with therapeutics. Before adopting too promptly the assertion of Letzerich, as to the fungous character of the diphtheritic formation, it would be well to remember that one of the first of microscopists, Dr. L. S. Beale (the Microscope in Practical Medicine), has said: "It is true that in many cases sporules of fungi are met with, but many circumstances prove satisfactorily that they merely grow in the false membrane, as in a nidus, favorable to their development, and are not to be regarded as the cause of its production."—T. P.]

COUNTER-IRRITATION IN DISEASES OF THE EYE.—Mr. Solomon, F. R. C. S., Professor of Ophthalmology in Queen's College, Birmingham, says:

"A very large number of eye diseases are curable without counter-irritants; nevertheless there remains a by no means insignificant number where strikingly good results attend upon or follow their use. As means of exciting counter-irritation, I employ the thread seton, the moistened lunar-caustic stick, blisters, croton-oil liniment, emetic-tartar plaster, and the pea issue. As regards the situations suitable for their application, I use a single thread in the temple, two or three when the mastoid region is selected, several in the nape of the neck. The moistened caustic stick is rubbed sometimes across the forehead, just above the brow and root of the nose; more often over the brow, temple, and malar bone; occasionally upon the superior lid. I never direct blisters or croton-oil to be put on the temples *as counter-irritants*, but reserve them for the mastoid region and nape of the neck. Pustular irritation should be confined in its application to the posterior half of the scalp. The arm is the preferable site for the pea issue, which is best made by an incision. In a male adult I seldom insert less than three peas or more than

four. A single thread seton in the temple proves of special advantage where the conjunctival layer of the cornea is vascularised. The more interstitial (the deeper) the keratitis, the less valuable is the thread as a therapeutic agent. Indeed it is useless, in the specific insterstitial form, until the stage of resolution has become established, when absorption is perhaps promoted by it. As a remedy against the superficial vascularity which often lingers after all active disease has subsided it is very valuable. In all cases of vascular ulcer, fascicular keratitis, and pustules of the cornea, it may be advantageously employed at the onset of the attack. (In catarrho-pustular conjunctivitis it has no effect.) The seton is not, however, the sole remedy for these diseases, nor in all cases the most effective.

"Where the inflammation of the cornea is manifested by zonular redness and superficial cloudiness in the membrane, I employ atropine drops, and the moistened caustic stick in place of a thread; also in that form of keratitis where we find thickening and vascularisation of the margin of the epithelium corneas, and a ciliary conjunctival vascular wreath instead of a zone. The stick should be lightly applied over a good breadth of surface. Severe vesication is unnecessary; ulceration I esteem baneful. The seton ought not to be inserted too near the eye; the most convenient place is well back in the short hair of the temple; and if the needle is carried in the direction of the trunk of the temporal artery, the formation of a thrombus will be prevented. In some patients the disease of the cornea proves obstinate until the thread gives rise to a free discharge of pus. The thread should not be removed till some ten or fourteen days after all pathological vascularity has sudsided; for, if withdrawn too soon, the red vessels which traversed the cornea reäppear.

"In superficial vascularity of some duration the seton rarely fails to cure. [It has been assumed throughout these remarks that the keratitis is altogether independent, in respect

to its origin, of mechanical irritation of the lids, and of disease of the lachrymal apparatus.] When both eyes are affected I insert a seton in each temple; and if a single thread fails to excite sufficient irritation it must be doubled. In cases of double keratitis, treatment, not necessarily by seton, of one eye is sometimes followed by improvement of the other; and I may here remark that any sort of treatment which relieves the photophobia is often a step toward improvement of the child's general health. A seton in the temple is not, in by far the large majority of cases, "a severe remedy." It will, however, sometimes give rise to abscess, erysipelas, or severe phlegmonous inflammation. The occurrence of abscess may be prevented by the daily cleansing and shifting of the thread, and the occasional use of a poultice. Erysipelas is due, I believe, to lack of hospital hygiene, as I have never noted its occurrence among out-patients. Owing to the proneness of certain young persons to phlegmonous irritation, I have found the seton in them to be totally inadmissible as a means of relief.

"It has been attempted to determine the relative value of two applications—as, for instance, the painting of tincture of iodine upon the lids, and the instillation of prussic-acid drops—by confining each one to the right or left eye of a patient affected with double keratitis and photophobia. Inferences so derived are untrustworthy and valueless, inasmuch as keratitis, and some other ophthalmiæ, do not run the same course in both eyes, or terminate in the same amount of structural change, whether left to run an undisturbed course, or submitted to constitutional treatment alone, or to the influence of local agencies only.

"In chronic interstitial keratitis, emetic-tartar pustulation upon the nape of the neck is a good remedy. In relapsing iritis, unconnected with important adhesions of the membrane to the capsule of the lens, or to the cornea, an issue in the arm, consisting of two or three peas, proves productive of

very satisfactory results. A seton over the mastoid is useful in certain obstinate inflammations of the choroid. In the retinitis of albuminuria, pustulation over the neck with croton-oil liniment is, I have satisfied myself, a valuable addition to other treatment. Where an ophthalmia is complicated by cerebral congestion the efficacy of irritation upon the neck or occiput admits of no doubt. In gouty affections of the choroid and chronic ophthalmia, blisters behind the ear, or mild irritation over the nape, with croton-oil, are remedies which should not be forgotten. *Counter-irritation of any sort is unnecessary, and often highly injurious, when applied to infants at the breast.* It is almost without value in the *acute* stage of an ophthalmia which is characterized by a copious purulent or muco-purulent discharge. When the pain from a counter-irritant is so severe that the health of the patient becomes seriously disturbed, its employment should be omitted, or changed for one of a milder kind. (Lancet.)

Transfusion Successful in a Case of Postpartum Hemorrhage.—Dr. Thos. E. Beatty, M. R. I. A., in a graphic report of a case of postpartum hemorrhage, in which it was manifest that the patient had not many minutes to live, recommended transfusion. The husband furnished the blood, and about ten ounces were drawn from his arm by Dr. R. M'Donnell. This, as it flowed into a common bowl, was agitated briskly with a glass rod, in order to separate the fibrine; and the agitation was kept up after the full quantity had been drawn, and for some minutes after, until a large coagulum of fibrine adhered to the glass rod. During all this time the bowl was kept floating in a basin of hot water. The blood was then strained through a muslin cloth, and all the fibrine was thus separated. All this was done in the parlor, and the blood thus prepared was carried up to the patient's bed-room. The difficulty of the operation now commenced. The patient was as a corpse, bloodless; there was no trace

of a vein to be found in her arm. A ligature tied round above the elbow showed nothing. By feeling cautiously, what we imagined to be a vein was perceived. Dr. M'Donnell now pinched up a fold of skin at the bend of the arm, ran a narrow bistoury through it, split it up, and displayed the veins at the bottom, resembling small flat dead earth-worms. The median basilic appeared to be the largest; this he raised and opened. The bowl of blood, which, during this necessarily tedious proceeding had been kept floating in hot water, was now brought to the bedside. The injecting apparatus was of the simplest construction. A common brass enema syringe that holds about two ounces, such as is used for self-administration, was fitted with a fine india-rubber tube coming off from the side. This was about a foot long, and terminated in a fine glass tube, four inches long, running to a fine point at its extremity.* I held the bowl containing the blood with my left hand, and with the right I held the brass syringe standing upright in the blood, and keeping the lower end of it well pressed to the bottom, so as to prevent the possibility of any air gaining access to the interior. Mr. Colles worked the piston slowly and cautiously. The instrument was filled with blood till it ran out of the nozzle, and Dr. M'Donnell proceeded to introduce the glass tube into the vein. But this was very difficult to effect; for, although a very sufficient opening had been made into the vein, it was so flat and collapsed that some time elapsed before he could accomplish his object. At length he succeeded, and Mr. Colles urged the blood forward by lowering the piston. About six or seven ounces of blood were thus poured into the system of the patient. It was intensely interesting to watch the effect produced by the introduction of this vital fluid. The first change I noticed was the improvement in respiration; the long labored, gasping, sighing effort that had been so

* The glass tube was used in order to facilitate the detection of any bubble of air, if such should gain entrance into the apparatus.

distressing to witness became more calm and like what natural respiration should be. This began to appear when about half the quantity of blood had been injected. The countenance became less ghastly, and imminent death seemed warded off when the last portion of blood had entered her vein. The restlessness and tossing still continuing, I gave her thirty drops of Batley's solution, and repeated the dose in half an hour; a third dose had the effect of producing sound sleep, from which in six hours she awoke, warm and conscious, with a distinct though very fast pulse. She asked for food, and ate a good breakfast of tea and toast. On the 23d, at twelve o'clock, she had been given beef-tea and brandy twice, and said she was quite well; her countenance was bright and cheerful; pulse one hundred and forty, small. The patient made a good recovery. This case serves to show that there is no such difficulty in safely performing transfusion as we have been led to imagine; but that when the principles which should govern the operator are fully comprehended, it rests upon his dexterity and skill to carry them out, and not upon a complicated and unwieldy piece of machinery. Like many other highly important operations, it is all in the using, not the costliness of the tools. (Dublin Quarterly Journal of Medical Science.)

Symptomatology and Treatment of Diabetes.—W. L., a patient with diabetes of moderate severity, was observed during four months in order to determine precisely the influence of regimen and of treatment. These are the results: 1. The production of sugar during the day is greater than during the night. 2. The increase in quantity of urine is directly proportional to the increase of sugar. 3. During the course of two intercurrent maladies—a pleuro-pneumonia, of eight days, and a rheumatismal diarrhea (in the latter the stools, which were very liquid, contained sugar, as shown by Trommer's test)—the quantity of urine and of sugar diminished decidedly.

4. Confinement to a meat regimen lessened notably the quantity of urine and of sugar. The use of bicarbonate of soda and of Carlsbad waters caused a still more rapid diminution; but the use of arsenic—one third (?) of a grain a day—seemed to have a specific action, the sugar falling from five hundred and seventy to three hundred and fifty-two grammes a day. In the case of another patient the arsenic had a salutary effect. *(Deutches Arch. Klin. Med.)*

Amputation at the Ankle-joint.—Stephen Smith, M. D., of New York, reports two successful cases of this operation, and remarks that amputation at the ankle-joint has not received that consideration from surgeons in this country which its real merits deserve. Unless the conditions are entirely favorable for a Syme's or a Pirogoff's operation, we too frequently amputate above the joint. The great value of the operations bearing these distinguished surgeons' names does not lie in the peculiarity of the flaps, but in the fact that by disarticulation the stump has for its base the broad extremity of the articular surface of the tibia. This bone, whether covered by the integuments of the heel, or sides of the ankle, or dorsum of the foot, or united to a fragment of the os calcis, is adapted to direct pressure in locomotion. In this fact alone we have the intrinsic merit of ankle-joint amputations. It should be a fixed principle in surgical practice, therefore, that whenever the integuments in the vicinity of the ankle-joint can be so shaped as to cover the end of the bone, amputation must be performed at, rather than above, the joint. (Physician and Pharmaceutist.)

Notes and Queries.

INFLUENCE OF QUININE ON THE GRAVID UTERUS.—Dr. Beauchamp, of Hamilton, Ohio, writes in reference to the alleged influence of quinine upon the gravid uterus, stating his belief that it is "miasm (toxæmia), or the condition of the system for which the quinine was given," that caused the premature labors attributed to this therapeutic agent. Dr. B. narrates two cases in illustration of his views. In the first his patient was delivered at seven months of a feeble, illy-nourished child, which lived but an hour; fifteen days prior to her labor she had intermittent fever, which was promptly cured by fifteen grains of sulphate of quinine and sulphate of cinchonia, in divided doses. Here the remoteness of the sequence forbids any connection between the antiperiodic and the premature labor. The second case is given as follows:

"Mrs. M. P. A., eight months pregnant, October 12, 1855, had been suffering repeated paroxysms of tertian intermittent since last month; was told that she must not attempt to arrest the disease, as she would certainly injure her child by the means used to break the chills. I decided to the contrary, and administered quinine during the 13th, after which no return of fever. During the night of the 14th she was taken with labor pains, and was soon delivered of a child weighing about five and a half pounds, which was so feeble that no attempt was made to dress it. I had it wrapped in warm flannels, and placed near the fire, until the afternoon of the 15th, when it was washed and dressed. The mother flooded previous to and after the delivery of the secundines, almost

ad deliquium; and two days after the confinement she was attacked with puerperal mania, which continued for nearly a month. How much more rational to attribute the abortions and premature deliveries to the known influence of malarial poisoning or to toxæmia than to accept the "*post hoc propter hoc*" of the quininists? In fact, do we not know that in all diseases where an impoverished or poisoned blood is an essential condition, as in the exanthematous and typhoid fevers, a proneness to abortion exists; and that in these diseases we very often have premature labors. I have known in my own practice a typhoid fever thus complicated, and the death of the mother was the result; the child was dead-born. Who does not fear abortion in the pregnant woman affected with variola?

"To further substantiate my belief, let me refer briefly to two cases reported by A. Burt, M. D., in the Medical and Surgical Reporter, February 7, 1870, the premature deliveries in which he attributed to quinine. In both the patients were suffering from febris intermittens; in one the child was dead, and in the other the labor followed almost within the hour after the administration of *eight* grains of quinine. The profession would surely be astonished if so potent an agent has been overlooked; and the belief in medical progress will suffer should it be established that quinine originates or accelerates uterine contractions. In Dr. Burt's first case the child was dead; but he does not charge the quinine with its death. The malarial poisoning of the mother's blood was no doubt the cause, and it would be rational to attribute its early delivery to the same potent cause. I believe that the cases of premature births charged to quinine have really resulted from the condition of the mother's system for which the remedy was administered."

Spirit of Mindererus.—A correspondent writes, asking as to the action of the acetate of ammonia, formerly much

more prescribed than it now is, in the form of the spirit of Mindererus, as an emmenagogue.

In reference to those remedies known by this title, it has been justly remarked by Siredey that there is no class of medicines enjoying the property of causing the menstrual flow, as there are medicines denominated purgatives which exert a direct and constant action upon the intestine.

Nevertheless there are medicines which, by a change in the condition of the blood, promote indirectly the menstrual discharge. Thus in an anæmic girl in whom all the functions of organic life languish, that of ovulation included, because of the blood impoverishment, every practitioner knows the value of suitable dietetic and hygienic means, of iron and of bitter tonics; with the restoration of the blood to its normal condition the life of the ovaries revives, and the periodic ripening and escape of an ovule determine coincident congestion of the uterus and hemorrhage from the ruptured capillaries of its mucous surface.

But, on the other hand, the amenorrhœa or the dysmenorrhœa may occur in a patient whose blood is directly opposite in character; she may be plethoric, and this plethora be the hinderance to the critical discharge. In reference to the treatment of this condition, we shall quote the words of the author referred to a moment ago, as most happily answering the interrogatory of our friend. After mentioning the fact that general depletion was held in much honor by the older physicians, and was by them so successfully employed in such cases, but to-day, though having so long reigned a sovereign, it is almost banished from therapeutics, he states that now we determine the greater fluidity of the blood by alteratives rather than by diminishing the general quantity. The effect of these agents is to lessen the plasticity of the blood, and consequently facilitate its escape through the capillaries of the uterine mucous membrane. Now among these agents the alkalies have the preference, and

the acetate of ammonia is more generally employed than any other. Observation has demonstrated the excellence of this medicine as an emmenagogue. But its action, well recognized, has been misunderstood by physicians who have used it. The acetate of ammonia is indeed a diffusible stimulant of the first order; and it is to this excitant action that the salutary effects following its use in amenorrhœa and dysmenorrhea have been attributed. But if we substitute for the spirit of Mindererus, in the cases we are considering—plethoric patients—the bicarbonate of soda, the same results are obtained—viz., the menses are painless, flow freely, and (an important point to notice) the blood is less dark, paler, thinner, and is not in clots; in a word, there is a manifest modification in its *crassus*.

According to Siredey, the alkalies are the emmenagogues, *par excellence*, for plethoric females. His method of treatment is as follows: two or three days before the expected "period" the patient should take, each twenty-four hours, from four to five grammes of the bicarbonate of soda, or from four to ten grammes of the spirit of Mindererus, in an aromatic draught; continue for four or five days—that is, until the flow is completely established. As an adjuvant, two or three alkaline baths may be taken in the week preceding menstruation.

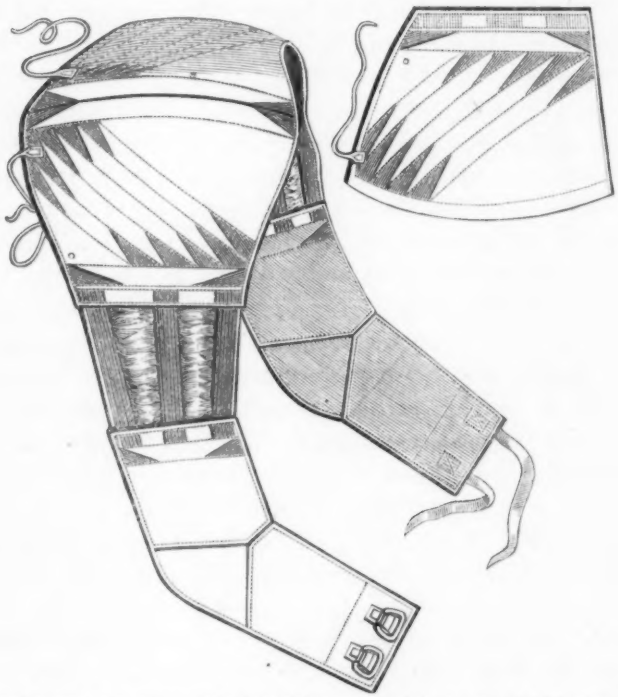
We believe the explanation of the emmenagogue power of acetate of ammonia here given is correct; and if true, we have a happy illustration of the progress of therapeutics; and thus every year medicine is more emancipated from the dominion of blind empiricism, and walks in the clear light of science.

A further inquiry as to what are *direct* emmenagogues we will probably consider in the next number of this journal.

Abdominal Corset.—The wood-cuts following represent the abdominal corset advised by Bernutz, in his and Goupil's joint work on diseases of women,* to be worn by patients

* Reviewed in American Journal of the Medical Sciences, July, 1867.

after attacks of inflammation of the pelvic peritoneum. We have found, in suitable cases, this apparatus so useful, contributing so much to the comfort, and safety even, that we believe it will be doing the profession a service to give these illustrations, with the remarks of Bernutz upon its utility



The right-hand figure represents half the middle portion of the corset. The left-hand figure represents the entire corset.

and his description of it. Those who examine carefully the second cut, and especially the corset itself, will be struck with the fact that the inferior border of the corset behind is higher than the superior border in front; in other words, that the pressure of the apparatus is not directly *backward*, but *upward* and backward, thus lifting up and supporting the abdominal viscera, which otherwise descend upon the sensi-

tive organs and tissues of the basin. This is one of its most important advantages, and renders it superior in our opinion to any similar apparatus we have ever seen. With these observations we give the text of Bernutz:

"The necessity of rest for the diseased organ is so great—an exception being made as to absolute continence, which should not be too prolonged—that I think it prudent, if not indispensable, in order to secure the immobility of the organs in walking or other exertion, to have women who have pelvi-peritonitis wear, even some time after their cure, a hypogastric girdle—a sort of corset for the lower part of the abdomen, made according to the foregoing model.

"This corset ought to be made of strong drilling, half cotton, half thread, having in its center two whalebones to correspond with the hypogastric curvature; whalebones also upon the sides, in order to compress the iliac fossæ; laterally, firm elastics, such as are used for garters, in order to permit readily the movements of the patient. It is fastened behind by straps, and by buckles without tongues; it is kept down by attaching to it, on either side, a piece of gum-elastic tubing, through which a strong tape passes, encircling the upper part of the thigh, and then tied to the corset some three inches further from the center than the fixed point of attachment.

"I prefer this to any other because it can be more readily worn; it keeps its position well; and is less repugnant to women, who would object to the surgical apparatus of an instrument-maker, but readily accept the corset of a seamstress. Just as the male wears a suspensory bandage after an attack of orchitis, so we advise this for a female after an attack of pelvi-peritonitis; and it should be worn as long as exercise causes a return of pelvic pains."